USN | | | | | | | | | |

Seventh Semester B.E. Degree Examination, Aug./Sept. 2020
Storage Area Networks

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1. a. Explain the key characteristics of a data center with neat diagram. **(07 Marks)**
    b. Consider a disk I/O system in which an I/O request arrives at the rate of 80 IOPS. Disk service time is 6ms. Compute
        i) Utilization of I/O controller
        ii) Total response time
        iii) Average queue size
        iv) Total time spent by a request in a queue
        If the controller power is doubled, what is utilization? **(05 Marks)**
    c. Discuss the functions of a logical volume manager with a neat diagram. **(04 Marks)**
    d. Explain how the process maps user files to disk storage. **(04 Marks)**

2. a. Describe RAID levels with reference to nested RAID, RAID3 and RAID5 with neat diagram. **(10 Marks)**
    b. Explain the structure, read and write operations in cache with neat diagram. **(10 Marks)**

3. a. Describe SCSI3-architecture in detail. **(05 Marks)**
    b. What is the significance of various layers of SCSI communication model? **(05 Marks)**
    c. Explain the connectivity options of FC [Fiber Channel] architecture and data transmission in FC – AL, FC – SW topology with relevant diagrams. **(10 Marks)**

4. a. What is NAS? What are its benefits? **(10 Marks)**
    b. Explain ISCSI connecting topologies with a suitable diagram. **(05 Marks)**
    c. Describe FCIP topology with neat diagram. **(05 Marks)**

PART – B

5. a. Explain the architecture of CAS with a neat diagram. List out the features of CAS. **(10 Marks)**
    b. Describe Storage virtualization types in detail and discuss its challenges. **(10 Marks)**

6. a. Explain the Backup and restore Operations in detail with neat diagram. **(10 Marks)**
    b. Describe the failure analysis in BC. Mention some important BC – technology solutions. **(10 Marks)**

7. a. Explain :
        i) LVM – based local replication
        ii) Pointer based full volume replication with respect to write to source. **(10 Marks)**
    b. Explain the various remote replication modes with neat diagram. **(06 Marks)**
    c. Write a note on DWDM. **(04 Marks)**

8. a. Describe SAN security architecture with neat diagram. **(06 Marks)**
    b. What are primary security attributes? **(04 Marks)**
    c. Describe storage management activities in detail with example. **(10 Marks)**

* * * * *